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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,020	12/14/2001	Syuichi Izuchi	Y31-138999C/KK	3545

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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/17/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,020

Applicant(s)

IZUCHI ET AL.

Examiner

Susy N Tsang-Foster

Art Unit

1745

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed on 7/21/2003. Claims 1-3, 5, 6, and 9-11 have been amended. Claims 12-20 have been added. Claims 1-20 are pending. Claims 1-20 are finally rejected for reasons necessitated by applicant's amendment.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 12 and 18-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 12, 19, and 20, the limitation "said liquid electrolyte comprises greater than 2 to 3 mols per liter of said lithium salt" is not in the original disclosure.

In claim 18, the limitation "said concentration of said lithium salt in said liquid electrolyte is at least 2.2 mols per l of the liquid electrolyte, and wherein said lithium battery comprises a discharge capacity of at least 4.0 mAh" is not in the original disclosure.

Art Unit: 1745

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-17, 19, and 20 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Taniuchi et al. (US 6,013,393).

See abstract; col. 1, line 45 to col. 2, line 15; col. 3, lines 1-35; col. 3, line 60 to col. 4, line 15; col. 4, lines 48-67; col. 5, lines 1-40; col. 6; lines 36-47 of the reference.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US Patent No. 5,972,539).

Art Unit: 1745

The product-by-process limitation "said gel electrolyte comprises a hardened mixture of a liquid electrolyte and a monomer having at least two polymerizable functional groups in its molecular chain" is not given patentable weight in product claims 3, 6, 8, and 10.

The product-by-process limitations of claims 3, 6, 8, and 10 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

Hasegawa et al. disclose a lithium battery having a power-generating element comprising a positive electrode, a negative electrode, and a gel electrolyte as a separator and the gel electrolyte comprises a polymer and a liquid electrolyte and the concentration of the lithium salt in the liquid electrolyte is preferably 0.5 to 2 M (see col. 9, lines 1-52; col. 10, lines 28-47 and Figure 1). The unit M is equivalent to moles per liter of the liquid electrolyte.

The ratio by weight between the ion conductive polymer and the liquid electrolyte in the gel electrolyte is 10:90 to 90:10 (col. 9, lines 60-65) which is equal to 10 to 90% by weight of the polymer based on the sum of the weight of the polymer and the liquid electrolyte. In an specific example, a gel electrolyte is obtained by polymerizing a mixture of a monomer given by formula (IV) which has two polymerizable functional groups and a methyl methacrylate and the resulting copolymer is solvent casted into a film and dried (col. 13, lines 24-39). Formula IV shows a monomer with bifunctional (meth)acrylate groups. The dried copolymer film is immersed into a liquid electrolyte to form the gel electrolyte and the gel electrolyte contains 70 weight% liquid

Art Unit: 1745

electrolyte and 30 weight % of the polymer (col. 13, lines 32-39). The gel electrolyte can also be formed by adding the liquid electrolyte to a mixture of a polymer and a flame retardant monomer followed by a crosslinking reaction which would harden the mixture (col. 9, lines 35-52).

The lithium salt in the liquid electrolyte can be at least one of LiBF_4 , LiPF_6 , LiAsF_6 , LiClO_4 , LiCF_3SO_3 (which has an organic anion), $\text{LiN}(\text{CF}_3\text{SO}_2)_2$ (which has an organic anion), $\text{LiN}(\text{C}_2\text{F}_5\text{SO}_2)_2$ (which has an organic anion), or $\text{LiC}(\text{CF}_3\text{SO}_2)_3$ (which has an organic anion) (col. 2, lines 41-45) and the organic solvent used in the liquid electrolyte can be γ -butyrolactone which would be 100% by weight of the organic solvent in the liquid electrolyte (col. 9, lines 25-34 and lines 53-60). The organic solvent in the liquid electrolyte ethylene carbonate, propylene carbonate, γ -butyrolactone and mixtures thereof (col. 9, lines 55-60).

Hasegawa does not disclose, teach, or suggest that the concentration of lithium salt in the liquid electrolyte is from greater than 2 to 4 mols per ℓ of the liquid electrolyte.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the concentration of lithium salt in the liquid electrolyte to be from greater than 2 to 4 mols per ℓ of the liquid electrolyte because it has been held in the courts that when the general conditions of a claim are similarly disclosed in the prior art, it is not inventive to optimize general conditions as concentration. In re Aller, Lacey and Hall, 105 USPQ 233,235.

8. Claims 1 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US Patent No. 5,972,539) in view of Poehler et al. (US 5,637,421).

Hasegawa et al. disclose a lithium battery having a power-generating element comprising a positive electrode, a negative electrode, and a gel electrolyte as a separator and the gel electrolyte comprises a polymer and a liquid electrolyte and the concentration of the lithium salt in the liquid electrolyte is preferably 0.5 to 2 M (see col. 9, lines 1-52; col. 10, lines 28-47 and Figure 1). The unit M is equivalent to moles per liter of the liquid electrolyte.

Hasegawa does not disclose that the concentration of lithium salt in the liquid electrolyte is from greater than 2 to 4 mols per ℓ of the liquid electrolyte or that the lithium battery comprises a discharge capacity of at least 4.0 mAh and the lithium salt in the liquid electrolyte is at least 2.2 mols per ℓ of the liquid electrolyte.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the concentration of lithium salt in the liquid electrolyte to be from greater than 2 to 4 mols per ℓ of the liquid electrolyte or at least 2.2 mols per ℓ of the liquid electrolyte because it has been held in the courts that when the general conditions of a claim are similarly disclosed in the prior art, it is not inventive to optimize general conditions as concentration. In re Aller, Lacey and Hall, 105 USPQ 233,235.

Poehler et al. teach a lithium secondary battery having a 3 mAh capacity and that the capacity of the battery may be increased by the simple expedient of increasing the area of the electrode structure (col. 8, lines 50-55).

Thus, Poehler et al. is clearly teaching the area of an electrode in a battery is a results effective variable. The courts have held that optimization of a results effective variable is not novel. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the area of the electrodes in the battery of Hasegawa to result in a battery having least 4.0 mAh discharge capacity because the required discharge capacity of the battery depends on the particular needs of an electronic application.

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taniuchi et al. (US 6,013,393) in view of Poehler et al. (US 5,637,421).

Taniuchi et al. disclose all the limitations of claim 18 above (see abstract; col. 1, line 45 to col. 2, line 15; col. 3, lines 1-35; col. 3, line 60 to col. 4, line 15; col. 4, lines 48-67; col. 5, lines 1-40; col. 6; lines 36-47 of the reference) except that the lithium battery comprises a discharge capacity of at least 4.0 mAh.

Poehler et al. teach a lithium secondary battery having a 3 mAh capacity and that the capacity of the battery may be increased by the simple expedient of increasing the area of the electrode structure (col. 8, lines 50-55).

Thus, Poehler et al. is clearly teaching the area of an electrode in a battery is a results effective variable. The courts have held that optimization of a results effective variable is not novel. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the area of the electrodes in the battery of Taniuchi et al. to result in a battery having least 4.0 mAh discharge capacity because the required discharge capacity of the battery depends on the particular needs of an electronic application.

Response to Arguments

10. Applicant's arguments filed 7/21/2003 have been fully considered but they are not persuasive.

With respect to the Hasegawa reference, applicant asserts that the reference is directed to a completely different subject matter from the claimed invention and that the reference is merely intended to provide a flame retardant solid electrolyte and that nowhere does Hasegawa even discuss at least one purpose to which the claimed invention is directed such as to provide a good discharge performance.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., high rate discharge performance) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Art Unit: 1745

The disclosure of Hasegawa reference is applied against the claimed subject matter.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Friday from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

Art Unit: 1745

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/ 

Susy Tsang-Foster
Primary Examiner
Art Unit 1745